REMARKS

Claims 1, 9, 11, 24, 31-32, 34, and 43-44 have been amended. Reconsideration of the claims is respectfully requested.

Claims 8, 20, 31, and 43 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Number 6,075,987 to Camp, Jr. et al. (hereinafter "Camp"). Independent claims 8 and 20 are directed to a method comprising: determining whether a GPS signal strength at the GPS-equipped mobile terminal is adequate to permit initialization of the reference GPS receiver associated with the GPS-equipped mobile terminal within a desired response time; and if not, originating a request for approximate locational information from the GPS-equipped mobile terminal to the Base Transceiver Station.

Applicants respectfully submit that the limitations of claims 8 and 20 are not taught or suggested by the Camp reference. Camp generally describes a search for a strong GPS satellite signal, i.e., strong enough to demodulate, is accomplished by limiting the integration time to between 1 to 10 mill-seconds total time (both coherent and noncoherent). This serves the dual purpose of limiting the time spent searching for this first GPS satellite signal. If a strong enough signal cannot be found, the method terminates and the user may be notified that a location determination cannot be made at this time. (See Camp, column 6, lines 47-56). As such, Camp utterly fails to disclose or suggest originating a request for approximate locational information from the GPS-equipped mobile terminal to the Base Transceiver Station if a GPS signal strength at the GPS-equipped mobile terminal is "inadequate" to permit initialization of the reference GPS receiver associated with the GPS-equipped mobile terminal within a desired response time, as set forth and

claimed in claims 8 and 20. Therefore, Applicants respectfully submit that claims 8 and 20 are allowable from the art of record, and a Notice of Allowance is respectfully requested.

With respect to independent claim 31, this claim is directed to a requesting means for requesting approximate navigational information for the GPS-equipped mobile terminal from the Base Transceiver Station, if said GPS signal strength is not adequate to permit said initialization. For reasons similar to those set forth with respect to claims 8 and 20, Applicants respectfully submit that the art of record does not disclose or suggest the afore-described element of claim 31. Applicants, therefore, respectfully submit that claim 31 is also allowable from the art of record, and a Notice of Allowance is respectfully requested.

With respect to independent claim 43, this claim is directed to a requesting means for requesting approximate locational information from the GPS-equipped mobile terminal to the Base Transceiver Station, if said GPS signal strength is not adequate to permit said initialization. For reasons similar to those set forth with respect to claims 8 and 20, Applicants respectfully submit that the art of record does not disclose or suggest the afore-described element of claim 43. Applicants, therefore, respectfully submit that claim 43 is also allowable from the art of record, and a Notice of Allowance is respectfully requested. Applicants, therefore, respectfully request that the Examiner reconsider and withdraw the § 102(e) rejection against claims 8, 20, 31, and 43.

Claims 1, 4-7, 13-19, 23, 24, 27-30, 36, 38-42, and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable for obviousness over Camp in view of U.S. Patent Number 5,952,961 to Denninger. The reference GPS receiver in Applicants' claims 1, 13, 24, and 36 transmits the estimated location of the reference GPS receiver to the GPS-equipped mobile terminal. This information is used to determine the

location of the GPS-equipped mobile terminal. Camp describes the use of only a single GPS receiver in a mobile terminal. The use of a second, reference GPS receiver is not disclosed. Denninger, likewise, fails to disclose this limitation. Thus, Applicants, respectfully submit that the art of record does not teach the Applicants' present invention.

It is, therefore, respectfully submitted that the claims 1, 13, 24, and 36, and all claims dependent therefrom, are allowable from the art of record and a Notice of Allowance is respectfully requested. Applicants, therefore, respectfully request that the § 103(a) rejection against claims 1, 4-7, 13-19, 23, 24, 27-30, 36, 38-42, and 46 be reconsidered and withdrawn.

Claims 9, 21, 32, and 44 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Camp in view of U.S. Patent Number 6,094,168 to Duffett-Smith et al (hereinafter "Duffett-Smith"). Applicants respectfully submit that the Duffett-Smith reference fails to overcome the deficiencies of Camp. Claims 9, 21, 32, and 44 include limitations similar to claims 1, 13, 24, and 26 and are allowable for similar reasons. It is, therefore, respectfully submitted that neither Camp or Duffett-Smith (nor any other art of record), taken alone or in combination, renders the present invention, as claimed, obvious. Applicants respectfully submit that claims 9, 21, 32, and 44 are in condition for allowance.. Thus, a Notice of Allowance is respectfully requested. Applicants, therefore, respectfully request that the § 103(a) rejection against claims 9, 21, 32, and 44 be reconsidered and withdrawn.

Claims 11, 34, and 37 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Camp in view of U.S. Patent Number 5,987,319 to Hermansson et al (hereinafter "Hermansson"). Claims 11, 34, and 37 include limitations similar to claims 1, 13, 24, and 26 and are allowable for similar reasons. It is,

therefore, respectfully submitted that neither Camp or Hermansson (nor any other art of record), taken alone or in combination, renders the present invention as claimed obvious. Applicants respectfully submits that claims 11, 34, and 37 are in condition for allowance. Thus, a Notice of Allowance is respectfully requested. Applicants, therefore, respectfully request that the § 103(a) rejection against claims 11, 34, and 37 be reconsidered and withdrawn.

In view of the above, it is believed that this application is in condition for allowance, and such a Notice is respectfully requested.

Respectfully submitted,

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Patent Application
Docket No.27943-00252USPT
P09890

EXHIBIT A
MARK-UP SPECIFICATION AMENDMENTS FOR
RESPONSE TO OFFICE ACTION DATED JULY 2, 2001

Page 7, lines 3-19:

As explained elsewhere in this application, this process of initializing a GPS receiver may often take several minutes.

The duration of the GPS positioning process is directly dependent upon how much information a GPS receiver has. Most GPS receivers are programmed with almanac data, which coarsely describe the expected satellite positions for up to one year ahead. However, if the GPS receiver does not have some knowledge of its own approximate location, then the GPS receiver cannot correlate signals from the visible satellites fast enough, and therefore, cannot calculate its position quickly. Furthermore, it should be noted that a higher [a] signal strength is needed for capturing the C/A Code and the NAV Code at start-up than is needed for continued monitoring of an already-acquired signal. It should also be noted that the process of monitoring the GPS signal is significantly affected by environmental factors. Thus, a GPS signal which may be easily acquired in the open becomes progressively harder to acquire when a receiver is under foliage, in a vehicle, or worst of all, in a building.

Recent governmental mandates, e.g., the response time requirements of the FCC Phase II E-911 service, make it imperative that the exact position of a mobile handset be

Page 18, lines 8-13:

encrypted bits. These encrypted bits are then fed to a burst builder 235 before being burst multiplexed at 240 in conformance with the GSM standard set forth by ETSI. The output of the burst multiplexer 240

are then fed to a differential encoder 245 before being modulated at 250. The modulated bits are then fed to a transmitter 260 and thence via an antenna 280 to the air interface 290.

In the reverse direction, the incoming signals received by the antenna 280 over the air interface 290 are fed to a receiver 270. The received information bits [299] 209 are then extracted by a receiver unit for functional compatibility with the processing performed in the transmit direction as explained above.

The basic GSM access scheme is Time Division Multiple Access (TDMA) with eight basic physical channels per carrier. The carrier separation is 200 KHz. A physical channel is therefore defined as a sequence of TDMA frames as additionally specified by a time slot number and a frequency hopping sequence. The basic radio resource is a time slot that lasts 15/26 ms (i.e. 576.9 μs) and which transmits information at a modulation rate of approximately 270.833 Kbits/s. This means that the duration of each time slot

Page 25, lines 9-21:

frequencies over which the mobile station is to hop, the hopping sequence number of the cell (which allows different sequences to be used on homologous cells) as well as the index offset (which helps distinguish multiple different mobile stations within a cell that use the same mobile allocation). It should be noted that a basic physical channel supporting the Broadcast Control Channel (BCCH) does not frequency hop.

The Cell Broadcast Channel (CBCH) has 228 bits per block, comprising 184 bits of data, 40 bits of parity and 4 bits are tail bits of the convolutional code. The blocks are convolutionally coded at a code rate of ½ resulting in a total of 456 coded bits/block. The blocks are interleaved to a depth of four over a number of bursts. A Broadcast Control Channel (BCCH) transmission, [–] like a Cell Broadcast

Channel (CBCH) transmission, has 228 bits per block, comprising 184 data bits, 40 parity bits and 4 tail bits[)], which are convolutionally coded at a ½ code rate resulting in 456 coded bits/block. However, unlike CBCH transmissions, BCCH transmissions are interleaved to a depth of six over a number of bursts.

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receiver does not have some knowledge of its own approximate location, then the GPS receiver cannot correlate signals from the visible satellites fast enough, and therefore, cannot calculate its position quickly.

Furthermore, it should be noted that a higher [a] signal strength is needed for capturing the C/A Code and the NAV Code at start-up than is needed for continued monitoring of an already-acquired signal. It should also be noted that the process of monitoring the GPS signal is significantly affected by environmental factors. Thus, a GPS signal which may be easily acquired in the open becomes progressively harder to acquire when a receiver is under foliage, in a vehicle, or worst of all, in a building.

Recent governmental mandates, e.g., the response time requirements of the FCC Phase II E-911 service, have made it imperative that the exact position of a mobile handset be determined in an expedited manner. Thus, in order to implement a GPS receiver effectively within a mobile terminal while also meeting the demands for expedited and accurate positioning, it has become necessary to be able to quickly provide mobile terminals with accurate assistance data, e.g., local time and position estimates, satellite ephemeris and

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EXHIBIT B
MARK-UP CLAIM AMENDMENTS FOR
RESPONSE TO OFFICE ACTION DATED JULY 2, 2001

1. (Thrice Amended) In a wireless telecommunications system having a Base Transceiver Station (BTS) and a mobile terminal equipped with an integrated Global Positioning System (GPS) equipped receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a method for determining the approximate position of the GPS-equipped mobile terminal, said method comprising the steps of:

demodulating signals received from a multiplicity of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

recovering respective navigational data signals from each of said demodulated GPS satellite signals at the reference GPS receiver;

originating a request for approximate navigational information from the GPS-equipped mobile terminal to the Base Transceiver Station;

transmitting [recovered] the navigational data signals to the GPS-equipped mobile terminal from the reference GPS receiver responsive to said request for approximate navigational information; and

determining, from said transmitted navigational data signals, the approximate location of the GPS-equipped mobile terminal;

wherein the GPS satellite signals comprise one of:

Standard Positioning Service (SPS) signals received on an L1 frequency, said L1 frequency being centered at about 1575.42 MHz; or

Precise Positioning Service (PPS) signals received on an L2 frequency, said L2 frequency being centered at about 1227.60 MHz.

9. (Twice Amended) In a wireless telecommunications system having a Base Transceiver Station (BTS) and a mobile terminal equipped with an integrated Global Positioning System (GPS) equipped receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a method for determining the approximate position of the GPS-equipped mobile terminal, said method comprising the steps of:

demodulating signals received from a multiplicity of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

recovering respective navigational data signals from each of said demodulated GPS satellite signals at the reference GPS receiver;

determining, from said transmitted navigational data signals, an estimated location of the reference GPS receiver;

originating a request for approximate navigational information from the GPS-equipped mobile terminal to the Base Transceiver Station;

[transmitting recovered navigational data signals to the GPS-equipped mobile terminal responsive to said request for approximate navigational information; and;]

transmitting the estimated location of the reference GPS receiver to the GPS-equipped

mobile terminal responsive to said request for approximate navigational information; and

determining, from [said transmitted navigational data signals] the estimated location of the reference GPS receiver, the approximate location of the GPS-equipped mobile terminal;

wherein said step of transmitting is performed via one of:

a Cell Broadcast (CB) Short Message Service (SMS) message of the wireless telecommunications system; or

a Broadcast Control Channel (BCCH) of the wireless telecommunications system.

11. (Twice Amended) In a wireless telecommunications system having a Base Transceiver Station (BTS) and a mobile terminal equipped with an integrated Global Positioning System (GPS) equipped receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a method for determining the approximate position of the GPS-equipped mobile terminal, said method comprising the steps of:

demodulating signals received from a [multiplicity] plurality of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

recovering respective navigational data signals from each of said demodulated GPS satellite signals at the reference GPS receiver;

determining, from said transmitted navigational data signals, an estimated location of the reference GPS receiver;

originating a request for approximate navigational information from the GPS-equipped mobile terminal to the Base Transceiver Station;

[transmitting recovered navigational data signals to the GPS-equipped mobile terminal responsive to said request for approximate navigational information;]

transmitting the estimated location of the reference GPS receiver to the GPS-equipped mobile terminal responsive to said request for approximate navigational information;

determining, from [said transmitted navigational data signals] the estimated location of the reference GPS receiver, the approximate location of the GPS-equipped mobile terminal;

periodically transmitting a Timing Advance parameter from the Base Transceiver Station to the GPS-equipped mobile terminal to dynamically compensate for varying distances between the GPS-equipped mobile terminal and the Base Transceiver Station; and

refining said approximate location of the GPS-equipped mobile terminal using said Timing Advance parameter.

24. (Thrice Amended) In a wireless telecommunications system having a Base Transceiver Station and a mobile terminal equipped with an integrated Global Positioning System (GPS) receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a system for determining the approximate position of the GPS-equipped mobile terminal, said system comprising:

demodulation means for demodulating signals received from a multiplicity of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless

telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

signal recovery means for recovering navigational data signals from each of said demodulated GPS satellite signals [from said GPS satellites] at the reference GPS receiver;

determination means for determining, from said transmitted navigational data signals, an estimated location of the reference GPS receiver;

requesting means for requesting approximate navigational information for the GPS-equipped mobile terminal from the Base Transceiver Station;

[transmission means for transmitting said recovered navigational data signals to the GPS-equipped mobile terminal responsive to said request for approximate navigational information; and]

transmission means for transmitting the estimated location of the reference GPS receiver to the GPS-equipped mobile terminal responsive to said request for approximate navigational information; and

determination means for determining, from [said transmitted navigational data signals to determine] the estimated location of the reference GPS receiver, the approximate location of the GPS-equipped mobile terminal;

wherein the GPS satellite signals comprise one of:

Standard Positioning Service (SPS) signals received on an L1 frequency, said L1 frequency being centered at about 1575.42 MHz; or

Precise Positioning Service (PPS) signals received on an L2 frequency, said L2

frequency being centered at about 1227.60 MHz.

31. (Twice Amended) In a wireless telecommunications system having a Base Transceiver Station and a mobile terminal equipped with an integrated Global Positioning System (GPS) receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a system for determining the approximate position of the GPS-equipped mobile terminal, said system comprising:

demodulation means for demodulating signals received from a multiplicity of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

signal recovery means for recovering navigational data signals from each of said demodulated GPS satellite signals [from said GPS satellites] at the reference GPS receiver;

determination means for determining, from said transmitted navigational data signals, an estimated location of the reference GPS receiver;

determining means for determining whether a GPS signal strength at the GPS-equipped mobile terminal is adequate to permit initialization of the reference GPS receiver associated with the GPS-equipped mobile terminal within a desired response time;

requesting means for requesting approximate navigational information for the GPS-equipped mobile terminal from the Base Transceiver Station, if said GPS signal strength is not adequate to permit said initialization;

[transmission means for transmitting said recovered navigational data signals to the GPS-equipped mobile terminal responsive to said request for approximate navigational information; and]

transmission means for transmitting the estimated location of the reference GPS receiver to the GPS-equipped mobile terminal responsive to said request for approximate navigational information; and

determination means for determining, from [said transmitted navigational data signals to determine] the estimated location of the reference GPS receiver, the approximate location of the GPS-equipped mobile terminal.

32. (Twice Amended) In a wireless telecommunications system having a Base Transceiver Station and a mobile terminal equipped with an integrated Global Positioning System (GPS) receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a system for determining the approximate position of the GPS-equipped mobile terminal, said system comprising:

demodulation means for demodulating signals received from a [multiplicity] plurality of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

signal recovery means for recovering navigational data signals from each of said demodulated GPS satellite signals [from said GPS satellites] at the reference GPS receiver;

determination means for determining, from said transmitted navigational data signals, an

estimated location of the reference GPS receiver;

requesting means for requesting approximate navigational information for the GPS-equipped mobile terminal from the Base Transceiver Station;

[transmission means for transmitting said recovered navigational data signals to the reference GPS receiver associated with the GPS-equipped mobile terminal responsive to said request for approximate navigational information; and]

transmission means for transmitting the estimated location of the reference GPS receiver to the GPS-equipped mobile terminal responsive to said request for approximate navigational information; and

determination means for determining, from [said transmitted navigational data signals to determine] the estimated location of the reference GPS receiver, the approximate location of the GPS-equipped mobile terminal[,];

wherein said transmission means comprises one of:

a Cell Broadcast (CB) Short Message Service (SMS) message over the wireless telecommunications system; or

a Broadcast Control Channel (BCCH) of the wireless telecommunications system.

34. (Twice Amended) In a wireless telecommunications system having a Base Transceiver Station and a mobile terminal equipped with an integrated Global Positioning System (GPS) receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a system for

determining the approximate position of the GPS-equipped mobile terminal, said system comprising:

demodulation means for demodulating signals received from a multiplicity of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

signal recovery means for recovering navigational data signals from each of said demodulated GPS satellite signals [from said GPS satellites] at the reference GPS receiver;

determination means for determining, from said transmitted navigational data signals, an estimated location of the reference GPS receiver;

requesting means for requesting approximate navigational information for the GPS-equipped mobile terminal from the Base Transceiver Station;

[transmission means for transmitting said recovered navigational data signals to the GPS-equipped mobile terminal responsive to said request for approximate navigational information;]

transmission means for transmitting the estimated location of the reference GPS receiver to the GPS-equipped mobile terminal responsive to said request for approximate navigational information;

determination means for determining, from [said transmitted navigational data signals to determine] the estimated location of the reference GPS receiver, the approximate location of the GPS-equipped mobile terminal[,];

means for periodically transmitting a Timing Advance parameter from the Base Transceiver Station to the GPS-equipped mobile terminal to dynamically compensate for varying distances between

the GPS-equipped mobile terminal and the Base Transceiver Station; and

means for refining said approximate location of the GPS-equipped mobile terminal using said Timing Advance parameter.

43. (Twice Amended) In a wireless telecommunications system having a Base Transceiver Station and a mobile terminal equipped with an integrated Global Positioning System (GPS) receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a system for determining the approximate position of the GPS-equipped mobile terminal, said system comprising:

a demodulator for demodulating signals received from a [multiplicity] plurality of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

computing means for determining an estimated location of said reference GPS receiver using said demodulated signals from said GPS satellites;

determining means for determining whether a GPS signal strength at the GPS-equipped mobile terminal is adequate to permit initialization of the reference GPS receiver associated with the GPS-equipped mobile terminal within a desired response time;

requesting means for requesting approximate locational information from the GPS-equipped mobile terminal to the Base Transceiver Station, if said GPS signal strength is not adequate to permit said initialization;

a transmitter for transmitting the estimated location of said reference GPS receiver from the Base Transceiver Station to the GPS-equipped mobile terminal responsive to said request for said approximate locational information; and

determination means for determining the approximate location of the GPS-equipped mobile terminal using said transmitted location of said reference GPS receiver.

44. (Twice Amended) In a wireless telecommunications system having a Base Transceiver Station and a mobile terminal equipped with an integrated Global Positioning System (GPS) receiver, the Base Transceiver Station having operational control of the GPS-equipped mobile terminal, a system for determining the approximate position of the GPS-equipped mobile terminal, said system comprising:

a demodulator for demodulating signals received from a [multiplicity] plurality of GPS satellites at a reference GPS receiver, said reference GPS receiver being connected to the wireless telecommunications system and having a determinate physical location relative to the Base Transceiver Station;

computing means for determining an estimated location of said reference GPS receiver using said demodulated signals from said GPS satellites;

requesting means for requesting approximate locational information from the GPS-equipped mobile terminal to the Base Transceiver Station;

a transmitter for transmitting the estimated location of said reference GPS receiver from the Base Transceiver Station to the GPS-equipped mobile terminal responsive to said request for said

approximate locational information; and

determination means for determining the approximate location of the GPS-equipped mobile terminal using said transmitted location of said reference GPS receiver;

wherein said transmitter transmits over one of:

a Cell Broadcast (CB) Short Message Service (SMS) message over the wireless telecommunications system; or

a Broadcast Control Channel (BCCH) of the wireless telecommunications system.